openreach

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Suppliers' Information Note

For The Openreach Network

Openreach Network Backhaul Services
Service & Interface Description

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CONTENTS

CONTENTS 2

1. INTRODUCTION 3

2. SERVICE OUTLINE 3

2.1 GENERAL 3
2.2 CP'S IDENTIFIED INTERFACE FOR OPENREACH NETWORK BACKHAUL SERVICES TERMINATION 4
2.3 ETHERNET INTERFACES 5
2.3.1 Transmission 5
2.3.2 Frame Length 6
2.4 DAISY CHAINING 6
2.5 RESILIENCE OPTIONS 6
2.5.1 Resilience Option 1 (RO1) 6
2.5.2 Resilience Option 2 (RO2) 6
2.5.3 Resilience Option 3 (RO3) – previously referred to as Resilient Option 2+2 6
2.6 OPENREACH NETWORK BACKHAUL SERVICES PRODUCT FEATURES 8

3. REFERENCES 8

4. FURTHER INFORMATION 9

5. ABBREVIATIONS 9

6. DOCUMENT HISTORY 10

FIGURES

FIGURE 1. TYPICAL ONBS SERVICE CONFIGURATION 4

TABLES

TABLE 1. NETWORK INTERFACES 5
TABLE 2. PRODUCT FEATURE SUPPORT 8

1. Introduction

This Suppliers' Information Note (SIN) describes the Next Generation Networks (NGN) Openreach Network Backhaul Services (ONBS) product. Products covered are 100 Mbit/s, 1000 Mbit/s and 10000 Mbit/s circuits, that will inter-work between BT's 21CN MSAN and Metro nodes, as described in the ONBS Product Handbook and ordered under the Openreach Network Ethernet Services contract terms and conditions.

Any specific technology mentioned in this document is current as of today, however it may be subject to change in the future. Should the specification of the interface be changed, this will be notified by a new issue of this SIN. Openreach reserves the right to adapt technology to deliver ONBS as new developments are made. All services are delivered over an uncontended transmission path.

This SIN should be read in conjunction with SIN 360[6], "Ethernet Customer Interfaces: Interface Characteristics".

SPECIAL NOTICE
Openreach has formally notified the withdrawal from new supply of all ONBS products as from 1st April 2013. Including all Resilience Options (RO1 & RO2) associated with the above products. Existing installed products will continue to be supported until otherwise advised, this includes in life resilience options along with Product bandwidth upgrades/ regrades, shifts and re-arranges.

Please refer to Openreach briefing ETH56/12 (www.openreach.co.uk)

2. Service Outline

2.1 General

The Openreach Network Backhaul Services products provide point-to-point uncontended Ethernet connectivity between BT NGN MSAN and MSAN or MSAN and Metro nodes respectively. Openreach Network Backhaul Services are offered at fixed Ethernet bandwidths of 100 Mbit/s, 1000 Mbit/s and 10000 Mbit/s only on an uncontended basis. Customer presentation is described in section 2.3.

The radial distance of a single circuit is limited from a BT NGN MSAN site to;

- the nearest BT MSAN site; or
- the nearest BT Metro Node site; or
- any BT MSAN site or BT Metro Node site within a distance of 15 km.

A schematic of the Openreach Network Backhaul service is shown Figure 1.

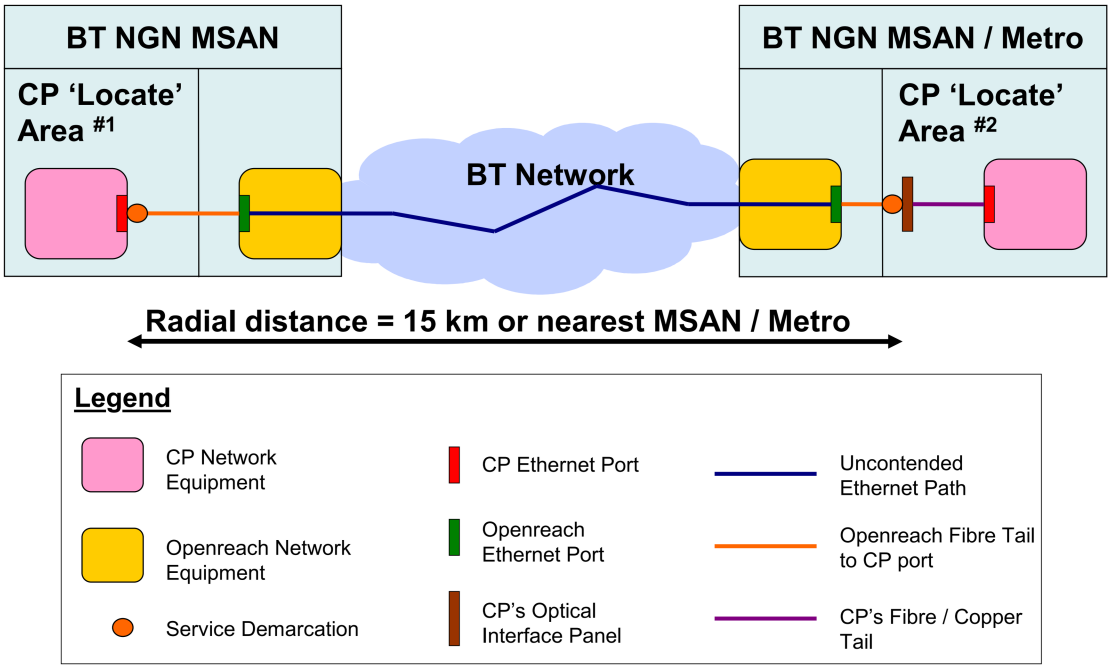

Figure 1. Typical ONBS service configuration

Note 1. Figure 1 shows CP's identified interface as both a direct port connection and an interface panel, both of which are customer options.

2.2 CP's Identified Interface for Openreach Network Backhaul Services termination

Service demarcation will be between CP's identified interfaces in CP areas of an MSAN or Metro site. The identified interface could be either (to be captured during order request):

1. CP owned and provided Interface Panel
2. CP owned and provided equipment interface (Ethernet port)

The interface is the Network Terminating Point (NTP), i.e. the connector on the end of the Openreach fibre tail.

The following physical optical interface connector types only are supported for the CP provided identified interface for ONBS products:

- FC / PC
- LC
- SC

The physical interface must be specified on the order request. Any conversion of interfaces is the CP's responsibility, i.e. the CP must provide interface converters on its card or at the interface panel, if necessary. Openreach

engineers must be provided with access to the identified interface point (whether that is an interface panel or the CP's actual interface card itself) for both fulfilment and assurance purposes.

Note 1. Angled connectors are NOT supported.

Note 2. Where a multi-mode fibre interface is chosen, i.e. 1000Base-SX Ethernet interface, performance can only be guaranteed if 50µm core fibre is used between the CP equipment (CP Ethernet port) and any interface panel.

2.3 Ethernet Interfaces

The Ethernet interfaces available for the Openreach Network Backhaul Services products are shown in Table 1. These interfaces will be used for the Openreach Ethernet port, see Figure 1.

The Ethernet interfaces conform to the IEEE 802.3[1] Ethernet framing and support IEEE 802.1q[2] encapsulation.

Note 1. CP equipment must have Auto-negotiation enabled on Gigabit Ethernet interfaces.

2.3.1 Transmission

Customers can, if required, use spanning tree packets (IEEE 802.1d[3], IEEE 802.1s[4] or IEEE 802.1w[5] control packets) across the Ethernet interface. The Openreach network will not participate with the spanning tree protocol, but will tunnel spanning tree packets between customer sites.

The access speeds currently supported are listed in Table 1. Note that for some services the contracted data rate may be below the access rate; in this case traffic should be shaped on egress at the CPE, and will be rate-limited on ingress to the network.

Interface	Fibre Type	Subject To Survey (Due to distance limitations)
100Base-LX	Single Mode	No
1000Base-LX / 10000Base-LR / 10000Base-LW	Single Mode	No
1000Base-SX	Multi-Mode	Yes

Table 1. Network Interfaces

Note 1. The Ethernet interface will be Fast Ethernet (Optical) as per the IEEE 802.3ah[8] standard or Gigabit Ethernet as per the IEEE 802.3[1] standard or 10 Gigabit Ethernet as per the IEEE 802.3ae[7] Standard.

Note 2. Please refer to SIN 360[6] for detailed Ethernet interface specifications.

2.3.2 Frame Length

2.3.2.1 100 Mbit/s speed

The service is capable of supporting IEEE 802.1q[2] VLAN-tagged frames of 1522 bytes in length, as well as being capable of transporting frames of up to 1548 bytes in length to maintain compatibility with a large number of vendor proprietary frame tagging formats. The frames are transported in both directions, full duplex, at wire-speed.

Note 1. The definition of frame length includes the 4 byte CRC but does not include any preamble.

2.3.2.2 1000 Mbit/s and 10000 Mbit/s speeds

The service is capable of supporting IEEE 802.1q[2] VLAN-tagged frames of 1522 bytes in length, as well as being capable of transporting Jumbo frames of up to 9000 bytes in length to maintain compatibility with a large number of vendor proprietary frame tagging formats. Service Performance however cannot be guaranteed when transporting Jumbo frames as they are not in the Ethernet standards. The frames are transported in both directions, full duplex, at wire-speed.

2.4 Daisy Chaining

It is the CP's responsibility to 'daisy chain' ONBS circuits, should they wish. Any testing by Openreach will only be performed on individual ONBS circuits and not end-to-end across a number of 'daisy chained' ONBS circuits.

Service parameters and performance where a directly connected configuration is used are indeterminate and no guarantees are offered. Therefore it is recommended to use customer equipment to daisy chain ONBS circuits for robustness.

2.5 Resilience Options

All resilience options will provide diversity on a reasonable endeavours basis, and will be subject to survey.

2.5.1 Resilience Option 1 (RO1)

This option will provide a single Ethernet presentation at both ends of the path with hot-standby working between Openreach Ethernet ports. This option is only available for 100 Mbit/s product speeds, see Table 2.

2.5.2 Resilience Option 2 (RO2)

This option will provide dual working paths. The B end can be the same or different sites. This option is available for all product speeds, see Table 2.

2.5.3 Resilience Option 3 (RO3) – previously referred to as Resilient Option 2+2

This option will provide four working paths – two Primary paths and two Secondary paths. There will be a common A end and two different B ends – each Primary path will terminate at separate B ends and their associated Secondary

paths will terminate at the opposite B end. Diversity will be offered between the two Primary paths and between each Primary path and its associated Secondary path. There will be no diversity offered between the two Secondary paths.

This option is available for ONBS 1000 and ONBS 10000 product speeds, see Table 2.

2.6 Openreach Network Backhaul Services Product Features

Table 2. outlines the features supported by the Openreach Network Backhaul Services products.

Product	Ethernet Interface	Product Speed	Resilient Option 1	Resilient Option 2	Resilient Option 3	Link Loss Forwarding
ONBS 100	FE / GE	100 Mbit/s	Yes	Yes	No	No
ONBS 1000	GE	1000 Mbit/s	No	Yes	Yes	Yes
ONBS 10000	10GE	10000 Mbit/s	No	Yes	Yes	Yes

Table 2. Product Feature Support

Note 1. For some services the contracted data rate may be below the Ethernet Interface access rate; in this case traffic should be shaped on egress at the CPE, and will be rate-limited on ingress to the network, e.g. where a GE interface is used to deliver a 100 Mbit/s service the contractual bandwidth is 100 Mbit/s, otherwise this may result in traffic loss.

Note 2. A feature of the ONBS1000 and ONBS10000 services only, is Link Loss Forwarding. This can provide an indication, across the customer interface, of a link failure on an Openreach network such that suitably configured CP equipment could detect the failure. This feature operates in a uni-directional fashion, such that a failure in one direction is indicated in one direction. An indication in the reverse direction may not always be present. A two way failure will cause an indication to both ends of the service. Operation under 'invalid conditions' is not defined.

ONBS10000 supports the transport from customer equipment of Link Fault Signalling (as defined in section 46.3.4 of 802.3ae), but Openreach does not guarantee that any non-standard use of the Inter-Packet Gap will be supported by this product.

Note 3. MAC Bridging is not supported on the Openreach Network Backhaul Services products.

Note 4. ONBS 1000 and ONBS 10000 also supports Resilient Option 3 up to a maximum of 4 circuits to two independent circuit B ends.

3. References

[1]	IEEE 802.3: CSMA/CD access method and physical layer specifications, 2002
[2]	IEEE 802.1q, VLAN tagging of Ethernet frames, 1998
[3]	IEEE 802.1d, Media Access Control (MAC) Bridges

[4]	IEEE 802.1s, Virtual Bridged Local Area Networks – Amendment 3: MSTP
[5]	IEEE 802.1w, Media Access Control (MAC) Bridges – Rapid reconfiguration
[6]	SIN 360, Ethernet Customer Interfaces, Interface characteristics, https://www.openreach.co.uk/orpg/home/helpandsupport/sins/sins.do
[7]	IEEE 802.3ae, IEEE standards for 10 Gigabit Ethernet in the LAN/WAN, 2002
[8]	IEEE 802.3ah, IEEE amendment , 2004

4. Further Information

For enquiries concerning connection availability between particular sites and for further product information on the Openreach Network Backhaul Services, please contact your company's BT Account Manager or Team.

For further information or copies of referenced sources, please see document sources at https://www.openreach.co.uk/orpg/home/helpandsupport/sins/sins.do

5. Abbreviations

BT	British Telecommunications plc
CD	Collision Detection
CP	Communications Provider
CPE	Customer Premises Equipment
CSMA	Carrier Sense Multiple Access
FC / PC	Fibre Connector / Physical Contact
GE	Gigabit Ethernet
IEC	International Electrotechnical Commission
IEEE	Institute of Electronic and Electrical Engineers [USA]
IPR	Intellectual Property Right
LAN	Local Area Network
LC	Lucent Connector
MAC	Medium Access Control
MSAN	Multi Service Access Node
MSTP	Multiple Spanning Tree Protocol
MTU	Maximum Transmission Unit

NGN	Next Generation Networks
NTP	Network Terminating Point
ONBS	Openreach Network Backhaul Services
RO	Resilience Option
SC	Subscriber Connector
SIN	Suppliers' Information Note [BT]
TBC	To Be Confirmed
UK	United Kingdom
VLAN	Virtual Local Area Network

6. Document History

Issue	Date	Revision changes
1.0	4 September 2006	First publication
1.1	10 Oct 2006	Minor editorial change to Figure 1 & reference to Table 1 corrected in 2.3.1.
2.0	1 March 2007	Updated to include ONBS 10000 and ONBS 100 Fast Ethernet and clarity on Resilience Options
2.1	25 February 2008	Updated to include clarity on Link Loss Forwarding
2.2	1 March 2013	Amended to advise no longer available for new supply w.e.f 1 April 2013
2.3	January 2016	Change SINet site references from http://www.sinet.bt.com to http://www.btplc.com/sinet/
2.4	August 2020	Changes to branding, from BT to Openreach including changes to reflect new Openreach SIN site and Openreach SIN email address
2.4	July 2021	Annual Review – no changes required – issue remains unchanged.
2.5	July 2022	Annual Review – no changes made – issue number therefore remains the same
2.5	July 2023	Annual Review – no changes made – issue number therefore remains the same
2.5	August 2024	Annual Review – no changes made – issue number therefore remains the same

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